

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An annular seal assembly for providing a fluid seal between an active pressure differential device and a wellbore sidewall, the seal assembly comprising:

a selectively inflatable seal element that is actuatable between a first position wherein the seal element is uninflated and a second position wherein the seal is inflated to provide a fluid seal during drilling; and

a hydraulic inflation system for selective actuation of the seal element between its first and second positions, the hydraulic inflation system including a fluid buffer to protect the inflatable element from excessive inflation forces.

2. (Canceled).

3. (original) The annular seal assembly of claim 1 wherein the annular seal assembly is actuated by flow of drilling mud.

4. (original) The annular seal assembly of claim 1 wherein the hydraulic inflation system comprises a hydraulic fluid chamber having an open end that is exposed to drilling mud flow, the drilling mud flow providing a fluid pressure source for inflation of the seal element to its inflated position.

5. (original) The annular seal assembly of claim 2 wherein the fluid buffer comprises a compressible spring for absorbing excessive fluid pressures.

6. (original) The annular seal assembly of claim 1 wherein the seal element is at least partially coated with a lubricant to facilitate movement of the seal element within a wellbore.

7. (original) The annular seal assembly of claim 1 wherein the seal element comprises an elastomeric inflatable packer.

8. (original) The annular seal assembly of claim 4 wherein the open end of the hydraulic fluid chamber is located on a radial exterior of said active pressure differential device to receive drilling mud that is returning to a surface of a well.

9. (original) The annular seal assembly of claim 4 wherein the open end of the hydraulic fluid chamber is located on a radial interior of said active pressure differential device to receive drilling mud that is being pumped downward through the active pressure differential device.

10. (original) A system for providing an active pressure differential within a wellbore, the system comprising:

an active pressure differential device having an outer housing and a fluid pump component;

an annular seal assembly for providing a fluid seal between the housing of the active pressure differential device and a wellbore sidewall, the seal assembly comprising:

a selectively inflatable seal element that is actuatable between a first position wherein the seal element is uninflated and a second position wherein the seal is inflated to provide a fluid seal; and

a hydraulic inflation system for selective actuation of the seal element between its first and second positions, the hydraulic inflation system comprising a hydraulic fluid chamber having an open end that is exposed to drilling mud flow, the drilling mud flow providing a fluid pressure source for inflation of the seal element to its inflated position.

11. (original) The system of claim 10 wherein the hydraulic inflation system further comprises a buffer for absorbing excessive inflation pressures.

12. (original) The system of claim 10 wherein the hydraulic inflation system further comprises a pair of cylinders, each of the cylinders being in fluid communication with the seal element and each of the cylinders contains a spring.

13. (original) The system of claim 12 wherein the cylinders are in fluid communication with each other

14. (original) The system of claim 10 wherein the seal element comprises

an annular elastomeric packer element that is integrated into a housing of the active pressure differential device.

15. (original) The system of claim 10 wherein the active pressure differential device comprises a pump.

16. (original) A system for providing an active pressure differential within a wellbore, the system comprising:

an active pressure differential device having an outer housing and a fluid pump component;

an annular seal assembly for providing a fluid seal between the housing of the active pressure differential device and a wellbore sidewall, the seal assembly comprising:

a seal element that is set against the wellbore sidewall to provide a fluid seal, and

a fluid passage that allows wellbore fluids to bypass the seal element as the active pressure differential device and annular seal assembly are run into the wellbore.

17. (original) The system of claim 16 wherein the fluid passage comprises a trip valve that permits one way fluid flow.

18. (original) The system of claim 16 wherein the seal element comprises a radially deformable mud cup.

19. (original) The system of claim 16 wherein the seal element is set by rotation of a sleeve element to preclude fluid flow through the fluid passage.

20. (original) A method of providing a seal between an active pressure differential device and a cased borehole wall, the method comprising the steps of:

disposing an active pressure differential device into a wellbore to a desired

depth, the active pressure differential device having a fluid pump and a radially outer housing, the active pressure differential device further having an annular seal element upon the outer housing;

setting the seal element to provide a fluid seal between the active pressure differential device and the cased borehole wall.

21. (original) The method of claim 20 wherein the seal element is inflated by flowing drilling fluid into the active pressure differential device and returning it to the surface of the wellbore.

22. (original) The method of claim 20 further comprising the step of buffering the seal element against excessive inflation pressures.

23. (original) The method of claim 20 wherein the step of setting the seal element further comprises receiving drilling fluid pressure into a hydraulic chamber within the housing, said drilling fluid pressure then being used to inflate the seal element.

24. (original) The method of claim 20 wherein the step of setting the seal element comprises setting a radially deformable seal against the cased borehole wall.

25. (original) The method of claim 20 wherein the radially deformable seal is set against the cased borehole by a pressure differential across the annular seal element.

26. (original) The method of claim 20 wherein the step of setting the seal element comprises radially expanding a seal portion under spring bias to engage the cased borehole wall.

27. (original) The method of claim 20 wherein the step of setting the seal element further comprises axially moving a sliding sleeve to permit the seal

portion to expand radially into engagement with the cased borehole wall.

28. (original) The method of claim 20 wherein the step of disposing the active pressure differential device into the wellbore further comprises allowing wellbore fluids to bypass the seal element as the active pressure differential device is disposed into the wellbore.

29. (original) The method of claim 28 wherein wellbore fluids are passed through a trip valve to bypass the seal element.